

Notice of Allowability

Application No.

10/689,461

Examiner

Delia M. Ramirez

Applicant(s)

HARRISON ET AL.

Art Unit

1652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/20/2006.
2. ☒ The allowed claim(s) is/are 8.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 12/2/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other alignment.

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DETAILED ACTION

Status of the Application

Claims 1-26 are pending.

Applicant's election of Group IV, claim 8, drawn to a polypeptide consisting of the amino acid sequence of SEQ ID NO: 2 in a communication filed on 4/20/2006 is acknowledged.

Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

In a telephone conversation with Ms Jane Potter on 6/26/2006, an agreement was reached to amend the specification to correct minor errors in the specification, to amend claim 8, and to cancel non-elected claims 1-7 and 9-26 to place the application in condition for allowance.

Priority

1. Acknowledgment is made of a claim for domestic priority under 35 U.S.C. 119(e) to provisional application No. 60/221,242 filed on 07/27/2000.
2. Acknowledgment is made of a claim for domestic priority under 35 U.S.C. 120 or 121 to US application No. 10/211,412 filed on 07/31/2002, and 09/916,109 filed on 07/25/2001.
3. The polypeptide of SEQ ID NO: 2 appears to have been first disclosed in provisional application No. 60/221,242 (shown in Figure 2).

Information Disclosure Statement

4. The information disclosure statement (IDS) submitted on 12/2/2004 is acknowledged. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

5. The drawings submitted on 10/20/2003 have been reviewed and are accepted by the Examiner.

Examiner's Amendment

6. An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
7. Amendments to the specification are required to comply with sequence rules and to correct an obvious error in the sequence identifier used.
8. Authorization for this Examiner's amendment was given in a telephone interview with Ms Jane Potter on 6/26/2006.
9. Please enter the following amendments to the specification as follows:
- a. On page 9, line 11, please replace "SEQ ID NO: 8" with "SEQ ID NO: 11".
 - b. On page 14, line 9, please replace "(EYMPTD)" with "(EYMPTD)(SEQ ID NO: 10)".
10. Please cancel non-elected claims 1-7 and 9-26.
11. Please replace claim 8 as follows:
- 8. An isolated polypeptide consisting of the amino acid sequence of SEQ ID NO: 2.

Reasons for Allowance

12. The following is an Examiner's statement of reasons for allowance. Although the prior art discloses a human glycogen synthase kinase 3β , the Examiner has found no teaching or suggestion in the prior art directed to a polypeptide consisting of the amino acid sequence of SEQ ID NO: 2 (394 amino acids long). The closest homolog to the polypeptide of SEQ ID NO: 2 is the human glycogen synthase kinase 3β (GSK- 3β) taught by Stambolic et al. (PIR accession number S53324; EMBL/GenBank

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accession number P49841, October 1, 1996; cited in the IDS; see attached alignment). The polypeptide of Stambolic et al. (420 amino acids long) has 97.2% sequence identity to the polypeptide of SEQ ID NO: 2 (97.5% = $384 \times 100 / 394$). The polypeptide of SEQ ID NO: 2 comprises amino acids 1-384 of the polypeptide of Stambolic et al. Therefore, claim 8 directed to the polypeptide of SEQ ID NO: 2, is allowable over the prior art of record.

Art of Interest

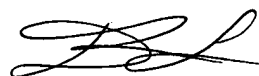
13. Bax et al. (Structure 9:1143-1152, December 2001) discloses a truncated version of human GSK-3 β which consists of amino acids 27-393 of the human GSK-3 β (420 amino acids long; PIR accession number S53324; EMBL/GenBank accession number P49841) and a histidine tag (page 1145, left column, Results, last complete paragraph).

Conclusion

14. Claim 8 is allowed.

15. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delia M. Ramirez whose telephone number is (571) 272-0938. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Ponnathapura Achutamurthy can be reached on (571) 272-0928. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1600.



Delia M. Ramirez, Ph.D.
Patent Examiner
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GenCore version 5.1.8
Copyright (c) 1993 - 2006 Bioacceleration Ltd.

OM protein - protein search, using sw model

Run on: May 16, 2006, 15:05:56 ; Search time 41 Seconds
(without alignments)
924.620 Million cell updates/sec

Title: US-10-689-461-2

Sequence: 1 MEYMPMEGSGMSGRPTTSF.....QELSSNPPLATILIPRIARI 394

Scoring table: BIOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues

Total number of hits satisfying chosen parameters: 283416

Minimum DB seq length: 0
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%
Maximum Match 100%

Listing first 45 summaries

Database : PIR 80:*

1: p1r1:*

2: p1r2:*

3: p1r3:*

4: p1r4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	2024	97.3	420	1	S53324
2	2010	96.6	420	1	TVRTKB
3	1931	92.8	420	1	IS1425
4	1923	92.4	420	2	IS1682
5	1607	77.2	483	1	TVRTKA
6	1590.5	76.4	575	2	S35327
7	1542.5	74.1	733	2	S10932
8	1542.5	74.1	1067	2	S35423
9	1342.5	64.5	362	2	T26500
10	1296	62.3	409	2	S51105
11	1275.5	61.3	471	2	T03601
12	1273.5	60.8	471	1	T02297
13	1265	60.8	408	2	T48637
14	1258	60.5	472	1	T01236
15	1256	60.4	412	1	S37642
16	1249	60.0	403	2	T03777
17	1249	60.0	431	2	S51106
18	1247.5	59.9	469	1	T02256
19	1246	59.9	409	1	S41597
20	1245	59.8	412	2	S71266
21	1244	59.8	411	1	S37643
22	1239	59.5	409	2	S52095
23	1234	59.3	380	2	T04863
24	1233	59.3	412	2	A84715
25	1232	59.2	405	1	S41596
26	1232	59.2	407	2	S77922
27	1229.5	59.1	420	2	A96613
28	1229.5	59.1	469	1	T02254
29	1228.5	59.0	447	2	F86232

30	1226	58.9	411	1	S37644	protein kinase MSK
31	1226	58.9	460	2	T08139	shaggy-like protei
32	1220	58.6	421	2	S51938	protein kinase Ack
33	1208	58.0	447	2	T01756	hypothetical prote
34	1178	56.6	468	2	A55476	protein kinase (EC
35	1158	55.6	431	2	T47908	shaggy-like kinase
36	1156.5	55.6	387	2	T37758	protein kinase skp
37	1109.5	53.3	354	2	T45138	protein kinase skp
38	996	47.9	381	2	T40746	serine-threonine p
39	996	47.9	390	2	T43008	probable protein k
40	978.5	47.0	452	2	T18457	glycogen synthase
41	940.5	45.2	354	2	F90121	hypothetical prote
42	940	45.2	370	2	A56347	protein kinase RIM
43	873.5	42.0	501	2	S67615	MKK1 protein - yea
44	792	38.1	211	2	T04119	probable serine/th
45	735.5	35.3	367	2	T19937	hypothetical prote

ALIGNMENTS

RESULT 1

S53324

G:Species: Homo sapiens (man)

C:Date: 10-Sep-1999 #sequence, revision 10-Sep-1999 #text-change 09-Jul-2004

C:Accession: S53324

R:Stambolic, V.; Woodgett, J.R.

A:Title: Mitogen inactivation of glycogen synthase kinase-3-beta in intact cells via se

A:Reference number: S53324; PMID:95071278; PMID:7960435

A:Accession: S53324

A:Status: preliminary; nucleic acid sequence not shown; translation not shown

A:Molecule type: mRNA

A:Residues: 1-420 <STP>

A:Cross-references: UNIPROT: P64881; UNIPARC: UP1000049310; EMBL: L33801; NID: G529236; PI

A:Note: the nucleotide sequence was submitted to the EMBL Data Library, August 1994

C:Comment: This enzyme is inhibited by phosphorylation of serine 9 by p70 S6 kinase (see

C:Genetics:

A:Gene: GDB: GSK3B

A:Cross-references: GDB: 6108057

C:Superfamily: kinase-related, transforming protein; protein kinase homology

C:Keywords: ATP; phosphoprotein; phosphotransferase

F:54-315/Domain: protein kinase homology <KIN>

F:62-70/Region: protein kinase ATP-binding motif

F:9/Binding site: phosphate (Ser) (covalent) (by ribosomal protein S6 kinase) #status e

F:85/Active site: Lys #status predicted

Query Match 97.3%; Score 2024; DB 1; Length 420;

Best Local Similarity 100.0%; Pred. No. 2, 6e-89;

Matches 384; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY	11	MSGRPRTTSFAESCCKVQOQSARFSKMSKVSMDKSGSKVTYVAVAPGQDPDPQSVSYDTK 70
DB	1	MSGRPRTTSFAESCCKVQOQSARFSKMSKVSMDKSGSKVTYVAVAPGQDPDPQSVSYDTK 60
QY	71	VINGSGFGVYQAKLDCDSEGLVAIKKYLQDKRPKNRELQIMRLDHCNRYRLRFFYSYG 130
DB	61	VINGSGFGVYQAKLDCDSEGLVAIKKYLQDKRKRELQIMRLDHCNRYRLRFFYSYG 120
QY	131	EKDDVYLVLDVDEYVETRYVARHYSRAKQTLPVIVYKLYMTQLFSLAYIHSFGICHR 190
DB	121	EKDDVYLVLDVDEYVETRYVARHYSRAKQTLPVIVYKLYMTQLFSLAYIHSFGICHR 180
QY	191	DIPQNLDDPDAVAKLDCDPSAKOLVNGEPVNSYICSNRYAAPLIFPATYTSIDV 250
DB	181	DIPQNLDDPDAVAKLDCDPSAKOLVNGEPVNSYICSNRYAAPLIFPATYTSIDV 240
QY	251	WSAGCVLAELIQPIFPDSDGVQDLVEIKVLTGTREQIRRMNPYTEFQPKAKAP 310
DB	241	WSAGCVLAELIQPIFPDSDGVQDLVEIKVLTGTREQIRRMNPYTEFQPKAKAP 300
QY	311	WTKVFRPRTPEPAIALCSRLLEYTPARLTPLEACAHSPFDELDPNVKHPGRDTPALP 370

Db 301 WTKVFRPRTPEPAIALCSRLLEYTPARLTPLACAHSPFDELDPNVKHPNGRDTPALF 360
 371 NETTOELSSNPPLATILIPPHARI 394
 Db 361 NETTOELSSNPPLATILIPPHARI 384

RESULT 2

TVTRKB

tau-protein kinase (EC 2.7.1.135) I - rat

N:Altiternae names: factor A; glycogen synthase kinase 3 beta; protein kinase GSK-3-beta;

C:Species: Rattus norvegicus (Norway rat)

C/Date: 31-Dec-1991 #sequence_revision 31-Dec-1991 #text_change 09-Jul-2004

C/Accession: S14708; S33741; S36729

R:Woodgett, J.R.

EMBO J. 9, 2431-2438, 1990

A>Title: Molecular cloning and expression of glycogen synthase kinase-3/Factor A.

A/Reference number: S14707; MUID:90316097; PMID:2164470

A/Accession: S14708

A/Molecule type: mRNA

A/Residues: 1-420 <MO>

A/Cross-references: UNIPROT:P18266; UNIPARC:UPI000012DDQ; EMBL:X53428; NID:956333; PIDN

A/Note: the author translated the codon ATG for residue 240 as Val

R:ishiguro, K.; Shitabuchi, A.; Sato, S.; Omori, A.; Arioka, M.; Kobayashi, S.; Uchida,

FEBS Lett. 325, 167-172, 1993

A>Title: Glycogen synthase kinase 3-beta is identical to tau protein kinase I generating

A/Reference number: S33741; MUID:93307488; PMID:7666508

A/Accession: S33741

A/Molecule type: mRNA

A/Residues: 1-239; 'V', 241-420 <ISH>

A/Cross-references: UNIPARC:UPI000001884; EMBL:X73653; NID:9402651; PIDN:CAAS2020.1; PI

A/Accession: S36729

A/Molecule type: protein

A/Residues: 37-58; 61-74; 151-158; 293-316; 318-325; 327-332; 351-368; 370-375 <ISH>

A/Cross-references: UNIPARC:UPI0000172536; UNIPARC:UPI0000172537; UNIPARC:UPI0000172538;

53D

C/Superfamily: kinase-related transforming protein; protein kinase homology

C/Keywords: ATP; phosphoprotein; phosphotransferase; serine/threonine-specific protein K

P:54-315/Domain: protein kinase homology <KIN>

P:62-70/Region: protein kinase ATP-binding motif

P:85/Active site: Lys #status predicted

Query Match 96.6%; Score 2010; DB 1; Length 420;

Best local Similarity 99.5%; Pred. No. 1.2e-88;

Matches 382; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

Qy 11 MSGRPRTTSFAESCKPVQOPSAFGSMKVRSDKGSKVTTVATPGGPDPRPQEVSYTDTK 70
 Db 1 MSGRPRTTSFAESCKPVQOPSAFGSMKVRSDKGSKVTTVATPGGPDPRPQEVSYTDTK 60
 Qy 71 VTGNSFGVYVQAKLSDSGELVAIKVLDQKRFKRELOIMKLDHCNTRLRIFYSSG 130
 Db 61 VTGNSFGVYVQAKLSDSGELVAIKVLDQKRFKRELOIMKLDHCNTRLRIFYSSG 120
 Qy 131 EKKDEVYLVLDYVETVYRVARHYSRAKQTLPIVYVLYVQVLFPSLAYIHSFGICHR 190
 Db 121 EKKDEVYLVLDYVETVYRVARHYSRAKQTLPIVYVLYVQVLFPSLAYIHSFGICHR 180
 Qy 191 DIRPQNLDPDPTAVLKLCDPFGSAKQLVGEPNVSYICSRYYRABELIFGATDYTSIDV 250
 Db 181 DIRPQNLDPDPTAVLKLCDPFGSAKQLVGEPNVSYICSRYYRABELIFGATDYTSIDV 240
 Qy 251 WSAGCVLAEILLGQPIFPDSDGVLDVLEIKVLTGPTREQIREMNPNTYEFKFPQIKAH 310
 Db 241 WSAGCVLAEILLGQPIFPDSDGVLDVLEIKVLTGPTREQIREMNPNTYEFKFPQIKAH 300
 Qy 311 WTKVFRPRTPEPAIALCSRLLEYTPARLTPLACAHSPFDELDPNVKHPNGRDTPALF 370
 Db 301 WTKVFRPRTPEPAIALCSRLLEYTPARLTPLACAHSPFDELDPNVKHPNGRDTPALF 360
 Qy 371 NETTOELSSNPPLATILIPPHARI 394
 Db 361 NETTOELSSNPPLATILIPPHARI 384

Db 361 NETTOELSSNPPLATILIPPHARI 384

RESULT 3

intracellular kinase (EC 2.7.1.-) - African clawed frog

C/Species: Xenopus laevis (African clawed frog)

C/Date: 13-Sep-1996 #sequence_revision 13-Sep-1996 #text_change 09-Jul-2004

C/Accession: I51425

R:Pierce, S.B.; Kimmel, D.

Development 121, 755-765, 1995

A>Title: Regulation of Spemann organizer formation by the intracellular kinase Xgsk-3.

A/Reference number: I51425; MUID:95437008; PMID:7720580

A/Accession: I51425

A/Status: preliminary; translated from GB/EMBL/DBJ

A/Molecule type: mRNA

A/Residues: 1-420 <PIE>

A/Cross-references: UNIPROT:Q91757; UNIPARC:UPI000005B682; GB:I38492; NID:9727189; PIDN

C/Genetics: A:Gene: Xgsk-3

C/Superfamily: kinase-related transforming protein; protein kinase homology

C/Keywords: ATP; phosphotransferase

P:54-315/Domain: protein kinase homology <KIN>

P:62-70/Region: protein kinase ATP-binding motif

P:85/Active site: Lys #status predicted

Query Match 92.8%; Score 1931; DB 2; Length 420;

Best local Similarity 95.3%; Pred. No. 6.5e-85;

Matches 365; Conservative 11; Mismatches 7; Indels 0; Gaps 0;

Qy 11 MSGRPRTTSFAESCKPVQOPSAFGSMKVRSDKGSKVTTVATPGGPDPRPQEVSYTDTK 70
 Db 1 MSGRPRTTSFAESCKPVQOPSAFGSMKVRSDKGSKVTTVATPGGPDPRPQEVSYTDTK 60
 Qy 71 VTGNSFGVYVQAKLSDSGELVAIKVLDQKRFKRELOIMKLDHCNTRLRIFYSSG 130
 Db 61 VTGNSFGVYVQAKLSDSGELVAIKVLDQKRFKRELOIMKLDHCNTRLRIFYSSG 120
 Qy 131 EKKDEVYLVLDYVETVYRVARHYSRAKQTLPIVYVLYVQVLFPSLAYIHSFGICHR 190
 Db 121 EKKDEVYLVLDYVETVYRVARHYSRAKQTLPIVYVLYVQVLFPSLAYIHSFGICHR 180
 Qy 191 DIRPQNLDPDPTAVLKLCDPFGSAKQLVGEPNVSYICSRYYRABELIFGATDYTSIDV 250
 Db 181 DIRPQNLDPDPTAVLKLCDPFGSAKQLVGEPNVSYICSRYYRABELIFGATDYTSIDV 240
 Qy 251 WSAGCVLAEILLGQPIFPDSDGVLDVLEIKVLTGPTREQIREMNPNTYEFKFPQIKAH 310
 Db 241 WSAGCVLAEILLGQPIFPDSDGVLDVLEIKVLTGPTREQIREMNPNTYEFKFPQIKAH 300
 Qy 311 WTKVFRPRTPEPAIALCSRLLEYTPARLTPLACAHSPFDELDPNVKHPNGRDTPALF 370
 Db 301 WTKVFRPRTPEPAIALCSRLLEYTPARLTPLACAHSPFDELDPNVKHPNGRDTPALF 360
 Qy 371 NETTOELSSNPPLATILIPPHARI 393
 Db 361 NETTOELSSNPPLATILIPPHARI 383

RESULT 4

glycogen synthase kinase (EC 2.7.1.-) 3 beta - African clawed frog

C/Species: Xenopus laevis (African clawed frog)

C/Date: 13-Sep-1996 #sequence_revision 13-Sep-1996 #text_change 09-Jul-2004

C/Accession: I51692

R:Domínguez, I.; Itoh, K.; Sokol, S.Y.

Proc. Natl. Acad. Sci. U.S.A. 92, 8498-8502, 1995

A>Title: Role of glycogen synthase kinase 3 beta as a negative regulator of dorsoventral

A/Reference number: I51692; MUID:95396823; PMID:7667318

A/Accession: I51692

A/Status: preliminary; translated from GB/EMBL/DBJ

A/Molecule type: mRNA

A/Residues: 1-420 <DOM>